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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**Docket Number (Optional)  
8540G-000187 (GP-303100)

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

Application Number  
10/780,025Filed  
February 17, 2004First Named Inventor  
GU, Wenbin et al.On December 22, 2006Signature *Jennifer Woodside Wojtala*Art Unit  
1745Examiner  
Walker, Keith D.

Typed or printed name Anna M. Budde / Jennifer M. Woodside Wojtala

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor

☐ assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

☐ attorney or agent of record.  
Registration number \_\_\_\_\_

☒ attorney or agent acting under 37 CFR 1.34.  
Registration number if acting under 37 CFR 1.34 35,085/50,721

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Telephone numberDecember 22, 2006  
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☐ \*Total of \_\_\_\_\_ forms are submitted.



**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: 10/780,025  
Filing Date: February 17, 2004  
Applicant: GU, Wenbin et al.  
Group Art Unit: 1745  
Examiner: Walker, Keith D.  
Title: CAPILLARY LAYER ON FLOWFIELD FOR WATER  
MANAGEMENT IN PEM FUEL CELL  
Attorney Docket: 8540G-000187 (GP-303100)

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Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**REASONS FOR REQUEST FOR PRE-APPEAL BRIEF REVIEW**

Sir:

In accordance with the Pre-Appeal Brief Request for Review and accompanying Notice of Appeal being filed herewith, Applicant is requesting review of the final rejection of the above identified application. The filing of the Notice of Appeal and the Pre-Appeal Brief Request for Review is within four-months of the mailing of the Final Office Action (and in response to an Advisory Action mailed November 8, 2006).

Applicants hereby petition under the provisions of 37 C.F.R. § 1.136(a) for an extension of time in which to respond to the outstanding Office Action and include a fee as set forth in 37 C.F.R. § 1.17(a) with this response for such extension of time.

## **CLAIM STATUS**

Claims 1-3, 5-12, 15-21 and 23 stand finally rejected under 35 U.S.C. § 103(a) over Miyazawa (U.S. Pat. Publ. No. 2003/0235735, hereinafter "Miyazawa") in view of Yamada (U.S. Pat. No. 5,432,023, hereinafter "Yamada"). Further, Claim 22 stands finally rejected under 35 U.S.C. § 103(a) over Miyazawa in view of Yamada and Davis (U.S. Pat. Publ. No. 2002/0001743, hereinafter "Davis").

In filing this pre-appeal brief review, Applicants respectfully submit that the rejections of record are not supported by the cited art and that the rejections of the claims are factually and/or legally deficient as they do not establish a *prima facie* case of obviousness. In particular, as described in more detail below, a *prima facie* case of obviousness has not been established, because (1) each and every element of the claimed invention is not disclosed in the cited art (Miyazawa, Yamada, and/or Davis); and further (2) the cited art teaches away from the combination necessary to arrive at the claimed invention. See *e.g.*, MPEP §2143; *In re Vaeck*, 20 USPQ.2d 1438 (Fed. Cir. 1991). For the reasons set forth below, Applicants request reversal of the final rejections.

### **1. Each And Every Limitation of the Claimed Invention Is Not Disclosed In the Cited Art.**

Independent Claim 1 recites a fuel cell having a fluid distribution layer disposed between an electrically conductive porous liquid distribution media and a cathode. Hence, the claimed invention provides a liquid distribution media that has sufficient electrical conductivity for being disposed between an electrically conductive separator and the fluid distribution layer during fuel cell operation, while providing the beneficial advantages of wicking liquids generated in the cathode.

Moreover, dependent Claim 3 specifically recites that an electrically conductive path is established between the impermeable separator plate and the conductive fluid distribution layer. Such a feature is not described or suggested by any of the cited references.

First, Miyazawa fails to teach or suggest a fuel cell architecture having a fluid distribution layer disposed between an electrically conductive porous liquid distribution media and a cathode, as recited in Claim 1. Second, Miyazawa lacks any disclosure or

suggestion of a liquid distribution media establishing an electrically conductive path between a fluid distribution layer media and an impermeable electrically conductive element, as recited in Claim 3. Neither Yamada nor Davis account for these deficiencies.

The Final Office Action states that in the Miyazawa reference "the LDM [14] forms an electrically conductive path between the ECE [4] and FDL [21]."<sup>1</sup> However, this proposition is wholly unsupported by the Miyazawa reference. Miyazawa lacks any teaching to form an electrically conductive path through the liquid distribution media.

The Miyazawa reference consistently teaches that the hydrophilic layer 14 is removed from the electrical contact regions 23 of the ribs 11 (of the separator plate 4) that contact the gas diffusion layer 21 during use.<sup>2</sup> This hydrophilic membrane 14 is the same element that the Examiner relies upon as being analogous to the presently claimed liquid distribution media.<sup>3</sup> Thus, Miyazawa does not and cannot meet the limitations of either Claims 1 or 3, because the hydrophilic membrane 14 (liquid distribution media) is never present on the top portions 23 of the ribs 14 during fuel cell operation and thus cannot possibly be disposed between, or form an electrically conductive path between, an impermeable element and a conductive fluid distribution layer. Miyazawa fails to provide the teachings or motivation necessary to arrive at Claims 1 or 3. In contrast to the claimed invention, Yamada specifies that the liquid distribution media ("wicking material") must be electrically non-conductive and fails to account for the deficiencies of Miyazawa.<sup>4</sup>

For the following additional reasons, Claims 6, 8, and 12 are allowable over the cited art. Claim 6 recites that the liquid distribution media overlies substantially all of the major surface of the impermeable substrate. Miyazawa teaches removing the hydrophilic coating from the top portions 23 of the ribs 11 and thus, only describes discrete regions of hydrophilic membrane 14 that do not cover all of the surfaces (sides 12, bottom 13, and top portions 23) of the ribs. None of the cited references describe or suggest the recited limitations of Claim 6.

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<sup>1</sup> Final Office Action Mailed Aug. 24, 2006, page 3 lines 2-3.

<sup>2</sup> See Response to Office Action Under 37 CFR §1.116; Oct. 24, 2006; page 16-17; Miyazawa at Paragraphs [0028] and [0033].

<sup>3</sup> See e.g., Final Office Action, Aug. 24, 2006, page 2 lines 18-19 and page 3 lines 2-3.

<sup>4</sup> Col. 47 lines 10-15; Col. 38 lines 8-9 and 67-68; and Col. 39 lines 21-25.

Additionally, Claim 8 recites the liquid distribution media itself forming an undulated configuration of peaks (lands) and valleys (grooves). Miyazawa only describes a coating 14 that lines the grooves (side and bottom portions 12, 13) of the rib material 11, but lacks any suggestion to actually form peaks/lands and grooves/valleys with the hydrophilic coating 14.

Claim 12 recites a liquid distribution layer that comprises two distinct layers. The second layer contacts the fluid distribution layer and is more hydrophilic than the second layer. None of the cited references discloses or suggests a liquid distribution layer that comprises two distinct layers having different hydrophilicity, as recited in Claim 12.

Yamada does not account for any of these deficiencies, thus Applicants submit that the present rejections are deficient because they lack a teaching of each and every element of Claims 1, 3, 6, 8, and 12.

**2. The Cited References Teach Away From Being Combined to Arrive at the Claimed Invention.**

Yamada teaches away from the liquid distribution media being formed of an electrically conductive material. Yamada states that “the materials for the wicks [to transport liquids] are not allowed to be conductors because conductors possibly form a cause for a short circuit.” Col. 47 lines 10-15 (*emphasis added*); see also, Col. 38 lines 8-9 and 67-68; and Col. 39 lines 21-25. Thus, Yamada teaches away from the combination with Miyazawa to arrive at the claimed invention where the liquid distribution media is required to be electrically conductive and to form an electrically conductive path.

As described above, Miyazawa provides no disclosure, suggestion, or motivation to arrange the architecture of a fuel cell element to create an electrically conductive path between an impermeable electrical element to a fluid distribution layer by respective electrical contact with a liquid distribution media.

For all of these reasons, Applicants submit that a *prima facie* case of obviousness has not been established or supported and that review via the pre-appeal brief program is appropriate.

Respectfully submitted,

Dated: December 22, 2006

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